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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/882,719	06/15/2001	Robert Joseph Bouchard	CL1673 US NA	1392

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EXAMINER	
MAYES, MELVIN C	

ART UNIT	PAPER NUMBER
1734	

DATE MAILED: 04/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/882,719	BOUCHARD ET AL.	
	Examiner	Art Unit	
	Melvin Curtis Mayes	1734	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17,24-39 and 54-82* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-11,54,55,60-65,69,76-80 and 82* is/are allowed.

6)☒ Claim(s) *12-17,24-39,56-59,67,68,70-75 and 81* is/are rejected.

7)☒ Claim(s) *66-68* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/24/05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

(1)

The indicated allowability of claims 12-17, 24-39, 57-59, 67, 68, 70-75 and 81 is withdrawn in view of the newly discovered reference(s) to Uemura et al. 6,239,547. Rejections based on the newly cited reference(s) follow.

Double Patenting

(2)

Claims 66-68 are objected to under 37 CFR 1.75 as being a substantial duplicate of claims 1, 12 and 13. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

The only difference in the wording between Claims 66-68 and Claims 1, 12 and 13 is the preamble. The claims thus cover the same subject matter.

Claim Rejections - 35 USC § 112

(3)

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

(4)

Claims 56 and 74 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 56 claims that the carbon nanotubes comprise multiwall carbon nanotubes but depends from Claim 5 which claims that the carbon nanotubes are single wall carbon nanotubes. Claim 56 does not further limit Claim 5.

Claim 74 claims "further comprising multiwall carbon nanotubes" but depends from Claim 71 which claims that the carbon nanotubes are single wall carbon nanotubes. Claim 74 does not further limit Claim 71.

Claim Rejections - 35 USC § 102 and 103

(5)

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

(6)

Claims 12-17, 24-39, 57, 58, 67, 68, 70-74 and 81 are rejected under 35 U.S.C. 102(e) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Uemura et al. 6,239,547.

Uemura et al. disclose a method of manufacturing an electron-emitting source having carbon nanotubes comprising: applying a bundle paste of carbon nanotubes (acicular emitting substance), silver paste and glass particles on a metal disk or insulating substrate (substrate) into

a pattern by screen printing; calcining by heating at 450°C to form a printed pattern of bundles of carbon nanotubes covered with silver particles bonded by binders obtained by fusing the glass particles; irradiating the surface of the printed pattern with a laser beam to selectively remove silver particles and binder in the surface and expose the carbon nanotubes on the bundle surfaces so that a larger number of electrons can be emitted. The carbon nanotubes have a diameter or 4 to 50 nm and length in 1 μm and may have a monolayer or multilayer structure (single wall or multiwall). As shown, the laser is irradiated perpendicular (normal) to the surface. The electron emitting source can be applied to a vacuum fluorescent display apparatus which employs a triode structure (electron field emitter, field emission triode or lighting device) (col. 1, lines 5-42, col. 11, line 60 – col. 13, line 56).

Further, by irradiating the surface of the printed pattern with a laser beam perpendicular to the surface to selectively remove silver particles and binder in the surface and expose the carbon nanotubes on the bundle surfaces so that a larger number of electrons can be emitted from the emitter such as vacuum fluorescent display apparatus which employs a triode structure, a force is applied to the surface of the electron field emitter in a direction essentially normal to the plane of the emitter such that the force fractures the emitter forming a new surface, as claimed in Claim 12, or results in the removal of a portion of the emitter thereby forming a new surface, as claimed in Claim 13, or results in an electron field emitter, field emission triode, completely screen printed field emission triode or lighting device with emission of the carbon nanotubes improved, as claimed in Claims 24-39.

With respect to product-by-process claims 24-39, even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product

itself. "When the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith." In re Brown, 459.F.2d 531, 535. 173 USPQ 685, 688 (CCPA 1972).

In this case, the electron emitter or vacuum fluorescent display apparatus with triode structure made by the method of Uemura et al. appears to be either identical with or only slightly different than the product claimed in product-by-process claims 24-39.

(7)

Claims 59 and 75 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uemura et al. as applied to claims 12 or 13 or 70 above, and further in view of Kim et al. 6,146,230.

Kim et al. teach that in an electron emitter, the amount of electron emitting material is preferably 1-50 weight% of the total composition, where below 1% electrons are rarely emitted and above 50% manufacturing becomes difficult due to high viscosity of the composition (col. 3, lines 30-36).

It would have been obvious to one of ordinary skill in the art to have provided the carbon nanotubes in the paste in an amount in the range of 1-50 wt%, as taught by Kim et al., as preferable for amount of electron emitting material in a composition for forming an electron emitter, below 1% electrons are rarely emitted while above 50% manufacturing becomes difficult due to high viscosity of the composition. By providing carbon nanotubes in amount in

the range of 1-50 wt%, the references suggest providing carbon nanotubes being less than 9 wt% of the total weight of the emitter, as claimed.

Allowable Subject Matter

(8)

Claims 1-11, 54, 55, 60-65, 69, 76-80 and 82 are allowed.

Claims 69, 76 and 79 have multiple dependency including from objected to Claim 66.

Conclusion

(9)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melvin Curtis Mayes whose telephone number is 571-272-1234. The examiner can normally be reached on Mon-Fri 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Fiorilla can be reached on 571-272-1187. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Melvin Curtis Mayes
Primary Examiner
Art Unit 1734

MCM
April 4, 2005